

DOCUMENT RESUME

ED 317 053

FL 018 396

AUTHOR Pye, Clifton
TITLE The Acquisition of Head Movement.
SPONS AGENCY Kansas Univ., Lawrence. General Research Fund.;
National Science Foundation, Washington, D.C.
PUB DATE 28 Dec 89
GRANT 3691-XX-0038; BNS-8909846
NOTE 15p.; Paper presented at the Annual Meeting of the
Linguistic Society of America (Washington, DC,
December 27-30, 1989). Research also supported by
Werner-Wren Foundation for Anthropological
Research.
PUB TYPE Reports - Research/Technical (143) --
Speeches/Conference Papers (150)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Language Acquisition; Language Research; Linguistic
Theory; Longitudinal Studies; Oral Language; *Quiche;
*Sentence Structure; *Syntax; Toddlers; Uncommonly
Taught Languages

ABSTRACT

An analysis of one theory of the acquisition of head movement by children is presented, using longitudinal data from the Mayan language, K'iche'. This theory assumes that children would just require positive evidence of head movement in the input language to instantiate the constructions of their own grammar. The Incorporation Theory addresses the incorporation of a phrasal head into a phrase headed by a different element. The principles and conditions of the incorporation theory are outlined, and the theory's treatment of passives, antipassives, and causatives is sketched, with examples for K'iche'. Data on the ages, numbers of utterances, and utterance length of K'iche' examples are presented. Passive, antipassive, and causative construction in K'iche' children's language samples, are presented and analyzed in the context of the theory. It is concluded that the data offer substantial support for a wide range of predictions. (MSE)

* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *

1989 LSA
Washington, DC
December 28, 1989

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)

☒ This document has been reproduced as
received from the person or organization
originating it.
☐ Minor changes have been made to improve
reproduction quality.

• Points of view or opinions stated in this docu-
ment do not necessarily represent official
OERI position or policy.

The Acquisition of X⁰ Movement

Clifton Pye

Baker (1988) provides an elegant account for a variety of syntactic processes in terms of one simple mechanism: X⁰ (or 'Head') Movement, which is just an extension of Move α to phrasal heads. This mechanism simplifies the explanation of how children acquire a diverse set of syntactic processes by relating them to a single process - the incorporation of a phrasal head into a phrase headed by a different element. Children would presumably just require positive evidence of head movement in the input language to instantiate the constructions in their own grammar. Since the structural changes and constraints in the process are part of UG, they would not have to be learned. Baker does not cite any acquisition data to support his hypothesis. It should be obvious, however, that such a sweeping theory has enormous implications for language acquisition. In this paper I will evaluate Baker's theory using longitudinal acquisition data from the Mayan language K'iche'.

Incorporation theory assumes the usual Government and Binding framework. Baker adds his own set of principles and conditions on head movement which I list in (1) on the handout.

(1) Baker's (1988) extensions and additions to GB theory:

(A) The Uniformity of Theta Assignment Hypothesis (UTAH):

Identical thematic relationships between items are represented by identical structural relationships between those items at the level of D-structure.

(B) The Mirror Principle:

Morphological derivations must directly reflect syntactic derivations (and vice versa).

(C) Head Movement Constraint (HMC):

An X⁰ may only move into the Y⁰ which properly governs it.

(D) The Government Transparency Corollary (GTC):

A lexical category which has an item incorporated into it governs everything which the incorporated item governed in its original structural position.

(E) The Visibility Condition:

B receives a theta role only if it is Case-indexed.

(F) The Case Frame Preservation Principle (CFPP):

A complex X⁰ of category A in a given language can have at most the maximal Case assigning properties allowed to a morphologically simple item of category A in that language.

"PERMISSION TO REPRODUCE THIS
MATERIAL HAS BEEN GRANTED BY

C. Pye

TO THE EDUCATIONAL RESOURCES
INFORMATION CENTER (ERIC)."

ED317053

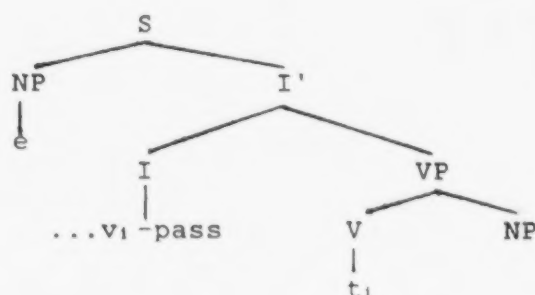
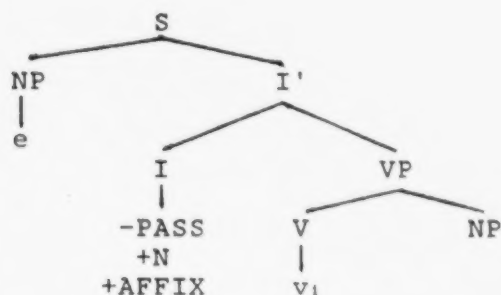
FL018396

(G) Stray Affix Filter:

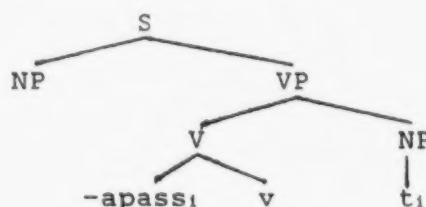
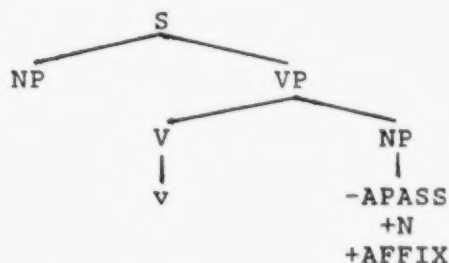
- * X if X is a lexical item whose morphological subcategorization frame is not satisfied at S-structure.

Baker's thesis is that these principles and conditions, along with those of GB theory, allow Move α to apply to the heads of phrases as well as to whole phrases in a principled manner. This results in a uniform treatment for a great variety of grammatical function changing rules. Sketches of his treatment of passives, antipassives and causatives are provided in (2) on the handout. I have omitted irrelevant details of the structures.

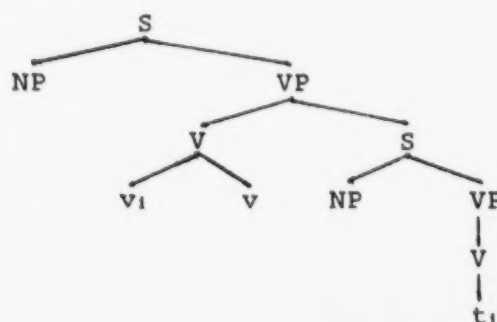
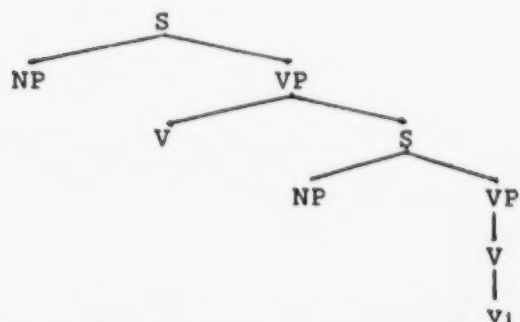
(2) (A) Passive



(B) Antipassive



(C) Causative



According to Baker, the passive affix takes the place of the subject NP. It receives the theta role normally assigned to the NP in subject position. The subject position is left empty. The

matrix verb then moves to INFL where it receives the passive affix. The antipassive affix takes the place of the direct object NP. It moves to the verb where it attaches to the verb stem. The causative construction begins with the causative morpheme appearing as the verb in the matrix clause. A verb in the lower clause may then move to the position of the verb in the main clause where the causative affix attaches to it. Baker provides another derivation of the causative construction in which the whole VP in the lower clause moves. This analysis does not apply to K'iche'.

K'iche', a Mayan language spoken by a million people in Guatemala has at least six syntactic processes which involve Head Movement: Verb Incorporation, a Causative construction, 2 Passives and 2 Antipassives. Baker hypothesizes that Head Movement applies to verbs in Causatives, Passives and Verb Incorporation, while it applies to nouns in the formation of Antipassives. Examples of each of these constructions in K'iche' are shown in (3) on the handout. I note in passing that K'iche' has an ergative cross-referencing morphology on verbs as well as a termination marker with distinctive transitive and intransitive forms. Passive and antipassive verbs are intransitive while causative verbs are transitive. The incorporation of a motion verb does not affect transitivity.

(3) K'iche' examples

(A) active construction

k-in-u-q'alu-j in le: nu-nan
INCOMP-1A-3E-hug-T me the my-mother

'My mother is hugging me.'

(B) passive constructions

x-in-q'alu-x-ik in r-umal le: nu-nan
COMP-1A-hug-PASS1-T me her-because the my-mother

'I was hugged by my mother.'

x-in-q'alu-taj-ik in r-umal le: nu-nan
COMP-1A-hug-PASS2-T me her-because the my-mother

'I got hugged by my mother.'

(C) antipassive constructions

k-in-q'alu-n-ik in che le: nu-nan
INCOMP-1A-hug-ABS-T me at the my-mother

'I hug my mother.'

le: in x-in-ya'-ow-ik jun wakax
the me COMP-1A-give-AGT-T one cow

'Me, I gave a cow.'

(D) the causative construction

x-0-u-pogow-isa-j ri: kape
 COMP-3A-3E-boil-CAUSE-T the coffee

'She boiled the coffee.'

(E) incorporated motion constructions

k-in-e-ka'y-a
 INCOMP-1A-go-look-T

'I'll go look.'

k-at-ul-inw-il-a
 INCOMP-2A-come-1E-see-T

'I'll come to see you.'

I tested Baker's hypothesis using longitudinal acquisition data I collected from three K'iche' children over a nine-month period. Background data for these children is shown in (4) on the handout. I am still in the middle of entering all of this data into the computer. At this time only the data from Al Tiya:n and A Carlos are accessible. There are certain gaps in the data for Al Cha:y which I hope to remedy in the near future. I have just finished coding data from Al Tiya:n's three-year-old sister, Al Se'p, which I will also use for this talk, but as yet I have not calculated a set of summary statistics for her language samples. She appears to be roughly comparable to A Carlos in mean length of utterance.

(4) Ages, number of utterances and MLUs across the K'iche' language samples.

=====									
Al Tiya:n				Al Cha:y			A Carlos		
Samples	age	number	MLU	age	number	MLU	age	number	MLU
1-3	2;1.17	732	1.2	2;9.8	945	1.6	3;1.5	735	1.8
4-6	2;2.6	1069	1.4	2;10.6	1348	2.1	3;1.25	963	2.4
7-9	2;3.19	1155	1.8	2;10.27	1160	2.2	3;4.2	1760	2.8
10-12	2;7.21	844	2.1	3;0.16	1197	2.7	3;4.23	1272	2.8
13-15	2;10.5	1026	2.8	3;1.5	1159	2.7	3;6.26	1333	3.1
16-18				3;2.28	1103	3.0	3;8.5	1508	3.3
19-21				3;4.10	794	3.2			

A generalized Head Movement rule is compatible with a number of acquisition scenarios. One could assume that the rule will only become available to children at a particular maturational stage (cf. Borer & Wexler 1987). After they reach that point they should be able to apply the rule 'across-the-board'. The sudden appearance of all the constructions which involve head movement would provide the strongest possible evidence for such a maturationist position.

Alternatively, children may rely more strongly on distributional analyses of the adult language. Children may only chose to use a head movement process if they find positive evidence for the process in the input. This position is broadly compatible with either an innate knowledge of head movement or the piecemeal discovery of the head movement process. Nevertheless, an empirical question remains of whether any evidence exists to suggest that children might pass through a stage of overgeneralizing the head movement rule to produce constructions that are not part of the adult language but which are licensed nonetheless by UG.

Other factors are also likely to interfere with children's ability to produce the constructions which rely upon head movement. Syntactic complexity, lexical retrieval processes, short-term memory, etc. might well affect the expression of head movement. These factors should impact the head movement constructions in different ways, depending on the specific factors involved in their production. For example, children might first experiment with noun incorporation since noun incorporation processes directly affect verb argument structures, in the case of the passive altering the canonical mapping from thematic roles to syntactic relations (cf. Pinker 1984). Baker's hypothesis also predicts that complex d-structures underlie causative and verb incorporation structures. Children may not produce causatives until they have mastered the art of complex sentence construction.

Before testing any of these hypotheses it is first necessary to establish when the alternations become a productive part of children's grammar. The null hypothesis must be that any nonbasic forms in the children's language are due to rote memorization rather than an actual rule of grammar. At a minimum, the demonstration of productivity requires that the nonbasic forms be found in more than a handful of the children's utterances. Even better evidence would be that children actually use both basic and nonbasic forms of the same verbs. The best evidence of all, of course, comes from the overgeneralization of the rule to forms that don't allow the rule to apply in the adult language or to nonce forms introduced to the children for the first time. Unfortunately, evidence of this latter sort is largely absent from my transcripts. However, there is evidence of productivity for some of the nonactive verb forms in the K'iche' transcripts.

The data in (5) shows the nonactive verb forms the children used as well as any other form of the same verb they may have used. I have included the sample number where each utterance was produced. I placed asterisks in front of the sample numbers for utterances where the children either failed to use the appropriate suffix or overgeneralized the suffix in an inappropriate fashion.

- (5) Passive and Antipassive constructions in K'iche' children's language samples.

Passivel

Al Tiya:n

T9 pa'ch 'smash'
'anik 'do'
T10 b'i:x 'say'

Other Forms

T6-20 ka'an daj (k-0-a-'an)
T4-16 b'i:j (ch-0-a-b'i-j)

T12-24 ch'iwik 'hit'
 T14-20 jik' mal b'atz' (x-0-jik')
 T15-14 loq' mal in xajab' in nta:t
 loq'ik (= x-0-loq'-ik)
 m nloq' mal nwa:ch in e

Al Se'p

S4-54 xa uq'ab' xu'anik. 'do'
 S5-12 an taj ne li. 'do'
 S7-4 kixtojik, tojik chi. 'pay'
 -53 ay, b'ix wech. 'say'
 -61 kinila ta chik e'. 'see'
 S8-6 loq jun upuwii lal Tian. 'buy'
 -10 o tak'alex kanoq.
 S12 xyoj kan 'scold'
 xya' loq 'give'
 kalch'ayik 'hit'
 kak'olik 'hide'
 S15 kilik 'see'
 -26 kak'utik 'show'
 ch'ay 'hit'

Al Cha:y

R4 pax we:ch 2x 'give'
 -39 xoj ta 'ut. 'scold'
 R5 cha:p uj ma:l 'grab'
 ti:j ma:l chi 'eat'
 R6 lo:q' Xela 'buy'
 R8 b'i:x ak' 'said'
 no ah xik 'said'
 R10 mera chi kaloq' 'buy'
 no chi:t wach tukut 'scratch'
 ya: luk' manena 'give'
 no mi:ch' uwi:' 'weed'
 R11 lo:q' wach 'buy'

A Carlos

C1 n kunax taj. 'cure'
 C2-43 lok Xela. 'buy'
 C7 t'i:sik. 'sew'

 ka:yik. 'hit'

 C8 ti'ik. 'bite'
 C9-20 ka'appisik. 'wrap'
 -64 elaq'axik. 'steal'
 C10-16 yojix kanoq. 'scold'
 -66 'anik. 'do'
 C12-6 ay kesasik chik e' 'take out'

T15-32 nch'ayo (k-0-in-ch'ay-o)

T15-1 inloq'o (k-0-in-loq'-o)

S5-4 le jun ku'ano le.
 S5-4 uke:m ku'ano.

S4-6 chaq' kub'i:j le.
 S7-28 jun ak'al karil panoq.

S11 kayajan taj
 S6-34 chaya' la lal
 S12 kalch'ayanik

S7-55 kawil e naj...
 S7-33 k'utu le: jun i.

R1-3 paj we (k-0-a-sipa-j)

R1-16 tijo cha (k-0-u-tij-o)
 -11 loq' ech wa (k-0-qa-loq')
 R3-18 b'i:j taj o (k-0-in-b'i-j)

R5-11 ya wech in (k-0-a-ya')

C6-37 inloq'o
 C12-54 int'is jun b'aq
 (k-0-in-t'is)
 C15-31 ach'iya jun tz'i'
 (ch-0-a-ch'ay-a')
 C7-38 ti' le: tz'i' (k-0-a-ti'-a)
 -36 nan, chapisa' (ch-0-a-pis-a')
 C9-17 welaq'aj (x-0-r-elaa'a-j)
 C8-60 we jun at e ayojij.
 C2-49 wach a'ano.

Passive2

Al Tiya:n

-

Al Se'p

S8-51 t'ub'itaj ne rumal q'ee.

S6-16 b'ay xt'ub'inik.

S15 qasataj awumal

x'antaj lujalom

S7-41 ma ka'an taj cha'.

Al Cha:y

R7 no loq'tajik 'buy'

R1-10 loq' wi (x-0-a-loq')

R12 tijtaj chi jun mal xirwel 'eat'

-16 tik lon (k-0-u-tij)

A Carlos

tijtajik 'eat'

C10-40 sokatajik 'wound'

C12-17 uy riqitanik 'find'

Focus Antipassive

Al Tiya:n

Active Forms

*T2-50 no', at, o 'You gave it.'

T7-73 inya'o (k-0-in-ya'-o)

*T10 pojoni (xpoqowik) 'boil'

Al Se'p

-

Al Cha:y

*R3 no Lin loq' 'buy'

R1-33 loq' wi wa (k-0-a-loq')

*R18-18 jachin ya'o bay chupam 'give'

A Carlos

C2-43 la le lu' lok'owik 'buy'

C6-37 inloq'o

C4 exowih 'give'

C4-23 chaya chuwach.

C8 at a'ayowik 2x 'give'

C8-25 la pela le' kinya'o.

towik 'hear'

C5-34 kinta le'.

Absolute Antipassive

Al Tiya:n

Active Forms

T3 tiyonik 'bite'

T4 atzin 'laugh'

T7 nik 'peck'

T4-32 ay, tzej e (k-0-u-tze'j)

T8 t'enik
 utin 'turn'
 T11 sutin 'turn'
 T12 jonik 'talk'
 T13 toq'opinik 'peck'
 q'upinik 'cut'
 T14 paqinik
 t'ub'inik
 raminik 2x 'rip'
 ketzijunik 'talk'
 qupin 'cut'
 T15 njan 'scold'
 T15 xa xpaq'inik
 ch'ayan 'hit'

T16-7 nqupij (k-0-in-q'upi-j)

T3-16 tij (x-0-u-t'ub'i-j)

T15-32 nch'ayo (k-0-in-ch'ay)

A1 Se'p

S6-16 b'ay xt'ub'inik.
 18 tzen ak'al. 'laugh'
 35 kintiyon in chi. 'bite'
 S7-18 chi katzenik chi.
 -25 toq'onik.
 -34 tzi katzen chik.
 S8-34 uya jun qana le le xet'onik.
 S11 xa mulan kanoq
 kasutin e: jun
 we xt'ukinik
 kayajan taj 'scold'
 S12 n k'o: ta chijat'in upam
 q'upinik
 ketzijonik
 ay t'ub'inik
 kalch'ayanik
 yajanik chi
 katiyonik

S8-51 t'ub'itaj ne rumal q'e:.

S6-23 ti tu' chi'.

S12 xyoj kan

S12 kalch'ayik 'hit'

A1 Cha:y

R1 xutin 'turn'
 R2 kachaku'un 'work'
 pan 'write'
 R6 jan a Xa'n 3x 'scold'
 R7 jan tat in 'scold'
 R9 k'an pin
 R12 no awuxik mich' 'pull'
 ch'akanik 3x 'win'

R5-11 no paj in (k-0-in-tzib'a-j)

A Carlos

C3-22 tz'i tz'en 'laugh'
 C4-25 innimanik 'write'
 C5-7 usutin ta'a le 'turn'
 *C7-65 ejatin e wik' akal (= jat'im) 'tie'
 C8-45 xib'inik 'scare'
 sutinik 2x 'turn'

C9-47 a ib'aj e: nub'i loq.

C15-5 asutij pe at.

C15-10 asutij pe at.

C9-49 yajan al sipa 'scold' C8-22 koijij chaq'.
 C11-30 q'upinaq chik 'break' C14-27 inq'upij ab' kamik.
 *C12-17 uy riqitanik (= xriqitajik) 'find' C7-53 wi liq chi jun wuj.
 C14-54 attzijon chi na wuk' 'talk'
 C17-15 telen b'i le: k'ik'. 'follow' C18-5 kintelej in.
 C19-11 jan taj. 'ride' C9-5 nkejem b'ik.
 C20-32 a xt'ub'inik

Although the overwhelming majority of children's utterances are in the active voice, they begin using the other voices when they are 2 years old. The children produce a variety of verbs in different voices at a fairly early age. There is a marked difference in the frequencies with which they used the different verb forms. It looks as though the children have learned the Passivel and Absolutive Antipassive forms and use them fairly regularly. There is less evidence for their use of the Passive2 and Focus Antipassive forms. At this time I do not know if this disparity reflects a difference in their use in the adult language. Note, however, that both Al Tiya:n and Al Cha:y failed to use the Focus Antipassive on two separate occasions in contexts where it is obligatory. A Carlos seems to have overextended the Absolutive Antipassive on two occasions, good evidence that he really was applying a rule.

There also appears to be a disparity in the times at which the children produced the various nonactive verb forms. Al Tiya:n produced most of her Absolutive Antipassives and all of her Passivel utterances after samples 4-6. She didn't produce any verbs in Passive2 or the Focus Antipassive forms. Al Cha:y, Al Se'p and A Carlos all produced Passivel and Absolutive Antipassive verbs in their early samples. They did not produce Passive2 verbs until later. I have no idea why A Carlos was such a precocious user of the Focus Antipassive.

If the acquisition order of these processes really is first the Passivel and Absolutive Antipassive forms followed by the Passive2 and Focus Antipassive forms then several accounts of the acquisition of passives are left unsupported. As I mentioned earlier, the best support for a maturational account would be to find that the children used all of these processes at the same point. Since they did not, a maturationist would have to attribute the delay to some other process, e.g. a difference in input frequency or grammatical function. However, this would seriously undermine the maturationist account since the earlier appearance of the other forms could also be attributed to the same factors, completely eliminating the need for maturation as a factor in language acquisition.

This acquisition pattern also undermines certain structuralist accounts of the acquisition of passives (Pinker 1989). Passives involve the elimination of an external argument, while antipassives involve the elimination of an internal argument (cf. Jaeggli 1988). Accounts of the acquisition of passives based on the distinction between internal and external arguments predict that children would acquire both K'iche' passive forms at the same time and likewise for the antipassives. The K'iche' children's actual acquisition pattern neatly crosscuts this prediction.

What about Baker's theory you ask. The K'iche' data support his theory in several respects. His incorporation account of passives and antipassives does not rely upon the distinction between external and

internal arguments. Therefore, his account is compatible with the simultaneous acquisition of passive and antipassive verb forms. His theory can also account for the different acquisition points of the various passive and antipassive forms in terms of the lexical acquisition of the incorporated passive and antipassive affixes. His theory treats these like any other noun, except that they are marked as affixes and must therefore be attached to another word. The K'iche' acquisition order then just reflects the different times at which the children became aware of these affixes.

I present the K'iche' data on causatives in (6) on the handout. This data doesn't appear to be as robust as the data on Passivel and the Absolutive Antipassive was, especially for Al Tiya:n and Al Se'p. One other interesting aspect of the data is that the children, with the exception of Al Cha:y, only appeared to have begun using causative verb forms in their later language samples. Al Tiya:n's only causativized verb appears in sample 15, while A Carlos appears to have only begun using the causative verb form in sample 12. Although Al Cha:y seems to have used causatives in her early samples, they only become frequent after her twelfth sample. Thus, the children seemed to have begun using causative verbs around their third birthday, give or take three months.

(6) Causative Constructions in the K'iche' samples

Al Tiya:n	Target Morphology
T15-30 b'isaj win. 'travel'	(= b'in-isa-j, travel-CAUSE-DER)
Al Se'p	
S12-23 kukamisaj kan la.	(= kam-isa-j, die-CAUSE-DER)
S15-30 xa ximb'inisaj	(= b'in-isa-j, travel-CAUSE-DER)
Al Cha:y	
R1-55 chat, ix, xa:j.	(= k'at-isa-j, shine-CAUSE-DER)
R6-33 lij in.	(= walij-isa-j, rise-CAUSE-DER)
R6-35 paq'ixaj chik.	(= paqal-isa-j, rise-CAUSE-DER)
paqixaj in chik.	(= paqal-isa-j, rise-CAUSE-DER)
R7-39 katixaj chaya.	(= k'at-isa-j, shine-CAUSE-DER)
R8-11 ay pich warli.	(= chup-isa-j, go out-CAUSE-DER)
R12-21 k'utisaj raya.	(= k'at-isa-j, shine-CAUSE-DER)
ma karaj taj chupixaj jun che.	(= chup-isa-j, go out-CAUSE-DER)
R13-18 q'etixaj.	(= qet-isa-j, come close-CAUSE-DER)
pelipe q'etixaj.	(= qet-isa-j, come close-CAUSE-DER)
R17-28 no, chupisaj taj q'eq.	(= chup-isa-j, go out-CAUSE-DER)
R18-37 k'o chiri, kamixan chah.	(= kam-isa-m, die-CAUSE-PERF)
R18-46 k'atixaj warih.	(= k'at-isa-j, shine-CAUSE-DER)
R18-47 waq'a xaj chika.	(= aq'an-isa-j, climb-CAUSE-DER)
R19-15 qana7 kinchupixaj.	(= chup-isa-j, go out-CAUSE-DER)
R19-23 kam kamixaj jun qak7.	(= kam-isa-j, die-CAUSE-DER)
R22-21 chupisaj chik juna.	(= chup-isa-j, go out-CAUSE-DER)
R24-8 no7, kak'atisaj.	(= k'at-isa-j, shine-CAUSE-DER)

A Carlos

C7-52	ki te k'atisaj jun che lee keb'e.	(= k'at-isa-j, shine-CAUSE-DER)
C12-23	chab'inisaj.	(= b'in-isa-j, travel-CAUSE-DER)
C12-58	inkaqtisaj.	(= ch'aq-isa-j, wet-CAUSE-DER)
	inkaqtisaj apantalon.	(= ch'aq-isa-j, wet-CAUSE-DER)
C15-25	kokusaj wa naj.	(= ok-isa-j, enter-CAUSE-DER)
C18-1	ixim poqisaj.	(= poq'-isa-j, explode-CAUSE-DER)
C18-1	xa'in xin poq'isaj.	(= poq'-isa-j, explode-CAUSE-DER)
C18-29	m, xaq kimpoq'isaj.	(= poq'-isa-j, explode-CAUSE-DER)

The productivity of the children's causativized verb forms may be assessed by searching for uses of the intransitive counterparts to their causativized verb forms. Al Tiya:n used the stem -b'in 5 times as an intransitive verb. Al Cha:y used the stem -aq'an once, the stem -kam 18 times, the stem -paqal 3 times and the stem -walij 4 times as intransitive verbs. She used the stem -chup 26 times and the stem -qet twice as transitive verbs. A Carlos used the stem -b'in 14 times, the stem -k'at twice and the stem -ok 24 times as intransitive verbs. So there is some evidence that the children were using the causative suffix to alter verb transitivity.

If Incorporation Theory is correct we should find a similar pattern for the children's acquisition of incorporated motion verbs in K'iche'. K'iche' permits reduced forms of three verbs of motion to be incorporated into transitive and intransitive verbs. Verb incorporation also changes the form of the termination marker on the main verb. In many cases, the K'iche' children only produced the final part of the verb, including the modified termination. When the context suggested an incorporated motion reading, my K'iche' assistants used such forms as the children's probably targets. I have also not been able to extract all forms of incorporated motion from Al Cha:y's data yet. The single form I list for her occurred in a context in which incorporated motion would be likely, yet she produced a verb form which lacks the proper termination.

(7) Utterances with incorporated verbs of motion

Al Tiya:n		Target Morphology
T14-19	enma chu loq	'bring' (= k-0-e-in-k'am-a)
T15-5	ju:n len nk'ama	'bring' (= k-0-e-in-k'am-a)
Al Se'p		
S6-29	kensik'ij kamik.	'call' (= k-0-e-in-sik'i-j)
-57	xa puro kensik'a	'smoke' (= k-0-e-in-sik'-a)
S13-13	jatama la at e.	'bring' (= je-0-a-k'am-a)
S14-12	xa ikem xekila wi cha.	'see' (= x-0-e-k-il-a)
-13	xeqila uj ruk' e: wa:tz	'see' (= x-0-e-q-il-a)
S15-19	kenweqaj chi le: we: li.	'carry' (= k-0-e-w- <u>eqa</u> -j)
-28	ay xekich'ay ki:b'.	'hit' (= x-0-e-ki- <u>ch'ay</u> -a)

Al Cha:y

R7-13	loq' e ti' uj.	'buy' (x-e-qa- <u>loq</u> '-o')
-------	----------------	---------------------------------

A Carlos

C5-39	enk'ama nuwuj a wan	'carry'	(= k-0-e-in-k'am-a)
C6-1	tija lajalom	'eat'	(= x-0-e-in-tij-a)
C8-66	ana kan jun nuchul	'do'	(= k-0-e-in-an-a)
C9-29	enkojo uk' uko'al	'use'	(= k-0-e-in-koj-o)
-45 *	jo qila le: k'ik'	'see'	(= je-0-qila')
C16-29	xeqaloq'o mayisena	'buy'	(= x-0-e-qa-loq'-o)
C18-15	kekesaj	'take out'	(= k-0-e-k-esa-j)
C20-12	jatawila pe'	'see'	(= je-0-aw-il-a)
-12 *	jo'eqatzukuj	'look for'	(= je-0-qa-tzuku-j)

Data from Al Tiya:n, Al Se'p and A Carlos suggest that their acquisition of verbs with incorporated motion did indeed parallel their acquisition of causativized verbs. A Carlos' first verb with an incorporated motion verb appears in his fifth sample, but he also produced forms in his ninth and twentieth samples (shown with asterisks) in which he used two separate verbs instead of the more appropriate incorporated motion form. I conclude that the K'iche' children's acquisition of causativized verbs and verbs with incorporated motion is compatible with the prediction from Incorporation Theory to a remarkable degree.

The final test of Incorporation Theory that I performed with the K'iche' data was a comparison the children's production of causativized verbs and verbs with incorporated motion to their production of complex sentences containing embedded verb phrases. Note in (2) that Incorporation Theory predicts the d-structure for causative constructions contains an embedded clause. A simple acquisition prediction would therefore be that the K'iche' children should only begin producing causativized verbs and verbs with incorporated motion after they have produced other constructions with complex d-structures. I provide the K'iche' data on complex sentences in (8). I have used slashes ('/') to indicate the verb stems in the children's utterances.

(8) Complex Sentences in K'iche'

Al Tiya:n

T7-50	/an taj /chi'.	'Do not do it, she said.'
T11-13	kar/aj k/oq'ik.	'She wants to cry.'
T15-4	< > nw/il ne' /ek.	'I saw him leave.'

Al Se'p

S1-31	/tija kal/cha'	'Eat it you say.'
S6-13	kin/ch'ob' taj /k'o wi le chikop.	'I don't know where the animal is.'
S6-15	xinw/il ta ne jun /k'o chupam.	'I didn't see the one that's inside.'
S7-23	/tajin ki/tij taj e aq e.	'The pigs aren't eating.'
S11-11	ma ka'/an ta k'ut we x/t'ukinik.	'Don't do it, it might peck.'
S12-23	we x/pe le: winaq ki/ch'ay kib'.	'If the people that hit each other come.'
S13-7	wa kar/aj ta chi ka/'ek.	'It doesn't want to leave.'

- S13-27 kin/k'ut chuwa lentat we x/ulik. 'I'll show my dad if he arrives.'
 S14-22 /k'o: jun wech /chupu. 'There's one of mine that went out.'
 S15-11 ay kar/aj x/tzaq loq e. 'It wants to fall down.'

Al Cha:y

- R1-16 /tijo /cha. 'He's eating he says.'
 R2-48 ay /'ax /'an. 'It is hard to do.'
 R5-10 /lij kab'ato /chaq e. 'There's the tie that fell.'
 R7-45 /'an /jo'n. 'She's doing the washing.'
 R8-11 no /b'ij chaj /chupxaj warli. 'You say she puts it out.'
 R8-13 te ka/loh /ek na. 'He sees that it left.'
 R10-17 no' /an /chapanik. 'He's doing the grabbing.'
 R12-21 ma kar/aj taj /chupixaj juN che'. 'He doesn't want to chop the tree.'
 -28 kar/aj taj ak' /xu' cham. 'The chicken doesn't want to wipe his nose.'
 R12-45 /kowinik w'il wakax. 'I can see the cow.'
 -46 w/aj taj /tij taj maxan. 'I don't want not to eat the apple.'
 -46 w/aj in /ch'aya' mex. 'I want to hit the cat.'
 -67 kol at /chaq ale' 'It's you that fell there.'

A Carlos

- C7-10 xa /kam ku ne le: at /cha'. 'You just carry it yourself he said.'
 -16 k/aj ta /chapik. 'They do not want to grab.'
 -60 w'il /kik. 'I saw him enter.'
 C9-34 m aw/ilo le: jun /k'o:lik e. 'You see the one that is there.'
 C10-33 l/aj in/walij taj. 'You want me to not get up.'
 C13-29 w/ila le: pe l/ano le'. 'Look what you are doing.'
 -60 inaw/aj /walik. 'I want to sleep.'
 C14-59 jat at ak'ala jela le'. 'Go stand over there.'
 C15-25 xaq kim/b'i:j in/kojo. 'Only I say I will do it.'
 C17-23 /e: cha /utij e: me's e'. 'He went to tie up the cat.'
 -28 /tajan ke/tzijon luk' le: mul. 'They are talking with the rabbit.'
 -67 x'/an x/qaj b'a' lit. 'He did the going down.'
 C18-12 ay /tajan k/utoqaj chik. 'He's taking it again.'
 -22 /o: jun q'ajom ka'/an walal li' 'There is a marimba you do here.'
 -33 ki/b'an /anik lit. 'They do it's doing.'
 -36 ma kal/aj taj /jikik ale' 'He doesn't want to tie it there.'
 C20-4 xa/b'i:j ya'a /o: inaj lale' 'You said there is a little one.'
 -12 /jo' e: qa/tzukuj 'Let's go look for it.'

Those of you with keener eyesight may notice that the complex sentence data contradicts the prediction of Incorporation Theory. Al Tiya:n, Al Se'p and Al Cha:y all produced complex sentences in their early samples. There is some reason to doubt this finding, however. If you'll look carefully at the last word in each of the children's first utterance you'll find that it is either -cha or -chi. My assistants translated these verbs with the Spanish verb 'diga' or 'say'. While the K'iche' versions use all the inflectional trappings of regular K'iche' verbs, they are unusual in several respects. The aspectual and cross-referencing morphology is optional with these verbs, and the verbs almost always appear in sentence-final position

whereas all other verbs most frequently appear in sentence-initial position.

I have only noted the first appearance of the -cha verbs in the children's transcripts, although they appear fairly regularly after this in the children's speech. There appears to be a disparity, however, between the children's use of complex sentences with -cha and other forms of complex sentences. This may indicate that the children did not initially treat sentences with -cha as involving a complex syntactic structure. Instead, they may have treated -cha as a verb particle. They produced a number of other verb particles in this position, and some of these particles also qualify the speaker's assertion of the truthfulness of the utterance. If this is indeed the case, then the K'iche' data would offer still more support for Incorporation Theory. The children did produce the other forms of complex sentences in later samples, and these slightly precede their use of causativized verbs and verbs with incorporated motion.

To conclude, I set out to test several predictions from Baker's theory of Incorporation with acquisition data from K'iche'. While the data is admittedly skimpy, it does offer remarkable support for a wide range of predictions. I can only conclude that Baker's theory is worth further investigation.

Notes

My research on the acquisition of K'iche' has been supported by The Wenner-Gren Foundation for Anthropological Research, The National Science Foundation (Grant No. BNS-8909846), and the General Research Fund of the University of Kansas (Grant No. 3691-XX-0038). I must also acknowledge the support I have received from the K'iche' community where I work and my K'iche' assistants Augustin Huix Huix and Pedro Quixtan Poz.

References

- Baker, Mark C. 1988. *Incorporation: A Theory of Grammatical Function Changing*. Chicago: University of Chicago Press.
- Borer, Hagit & Wexler, Kenneth. 1987. The maturation of syntax. In Thomas Roeper & Edwin Williams (Eds.), *Parameter Setting*, pp. 123-172. Dordrecht: D. Reidel.
- Jaeggli, Osvaldo A. 1986. Passive. *Linguistic Inquiry* 17. 587-622.
- Pinker, Steven. 1989. *Learnability and Cognition: The Acquisition of Argument Structure*. Cambridge, MA: MIT Press.